The Batsheva de Rothschild Seminar on

The Science of Neutrons

15-19 March 2020 | Ein Gedi, Israel

The Science of Neutrons School and Seminar aims at increasing the knowledge, visibility and opportunities of neutrons to the Israeli academic community, and promote innovative multidisciplinary research with neutrons. It is jointly organized by Israeli Universities and the research centers SNRC and NRCN, the Institut Laue–Langevin (ILL), the European Spallation Source (ESS), and the Technical University of Denmark (DTU).

The seminar is an opportunity for scientists and students from diverse communities e.g., magnetism, physics, biology or soft condensed matter to learn how neutrons can be used to investigate the structure and dynamics of a broad range of materials.

GRANTS ARE AVAILABLE FOR 20 YOUNG RESEARCHERS, POSTDOCS OR GRADUATE STUDENTS!

Registration on:

The Science of Neutrons - Israel 2020

For more information, contact us at : Neutrons.Israel.2020@gmail.com

האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

THE ISRAEL ACADEMY OF SCIENCES AND HUMANITIES
The Batsheva de Rothschild Fund for the Advancement of Science in Israel
The American Foundation for Basic Research in Israel

SOREQ Soreq Nuclear Research Center

TEL AVIV UNIVERSITY אוניברסיטת תל אביב

Israel Atomic Energy Commission

NRCN

מכון ויצמן למדע WEIZMANN INSTITUTE OF SCIENCE

אוניברסיטת בן-גוריון בנגב Ben-Gurion University of the Negev

הטכניון מכון טכנולוגי לישראל TECHNION Israel Institute of Technology

PAZY EXCELLING IN SCIENCE

קרן מדרחי למחקר FONDATION MISRAHI POUR LA RECHERCHE

DTU Technical University of Denmark

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Ministry of Higher Education and Science Denmark

ess EUROPEAN SPALLATION SOURCE

ILL THE EUROPEAN NEUTRON SOURCE

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brightness²

FILL 2030

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The Science of Neutrons – Techniques

- Introduction to neutron scattering, neutron sources and neutron instruments, optics
- Why deuteration? Making hydrogen visible
- Crystallography and diffraction
- Small-angle neutron scattering
- Neutron reflectrometry
- Magnetic diffraction and polarized neutrons
- Neutron spectroscopy
- Imaging, radiography, and tomography
- Residual stress diffraction and strain scanning

The Science of Neutrons – Applications

- Neutrons for matter under high pressure
- Neutrons reflectometry for soft matter and biology
- Neutron imaging for energy materials
- Spectroscopy in solid state physics & chemistry
- Neutrons for quantum and advanced materials
- Diffractometer studies with thermal neutrons
- Neutron Instrumentation and techniques for applied materials science

The Science of Neutrons – Complementary Techniques

- Super-resolution microscopy, SAXS and contrast variation SANS of field-directed self-assembly
- Monitoring nucleation and growth in-situ using synchrotron GIXD

An Israeli View on Neutrons

- An overview of the Soreq Applied Research Accelerator Facility
- SARAF: A unique source of neutrons for science in Israel
- First neutron based material research experiments at SARAF-I
- Fast chopping and (n,n') experiments at SARAF

Neutron scattering at the ILL

Grand picture, challenges and recent developments

The European Spallation Source

Status of the project and Future Science

Neutrons in Biology

Structure, interactions, dynamics in macromolecules and large cellular machines and complexes

SANS in the Nano World

Soft matter, colloids, Interfaces, bioinspired materials

Neutrons and life-time (life-cycle) of materials

Nanostuctured and advanced materials, nuclear astrophysics and nuclear nanomedicine

Neutrons for optimized energy usage

Magnetism and superconductivity, fuel cells, lightweight materials